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Comint and Comsec: The Tactics of 1914-1918—Part II

Organizationally, there was little distinction between Comint and Comsec; they were two sides of the same coin. But they developed at vastly different rates, with Comsec consistently lagging behind Comint. Indeed, indifference to the importance of protecting communications contributed greatly to the art of communications interception.

An example of the serious losses suffered by the Russian army as a result of poor Comsec was mentioned in part one. Less well known is the fact that other countries, particularly Britain and the United States, also paid heavily for their Comsec mistakes. Of the major powers, France and Germany were the most consistently aware of the importance of communications discipline.

The Allies

Russia.—Except for futilely looking for spies among their ranks and court-martialing some officers with German-sounding names, the Russians did nothing to try to plug the leaks in their communications until late 1915, when the first Comsec station was established. But it was too late. The Comint advantage which the Germans gained during the first month of the war continued until Russia, torn by revolution, left the war in 1917.

Britain.—Britain's Comsec awakening came in 1915 when it was discovered that the enemy was intercepting British forward wireline communications. Orders were immediately issued to improve the insulation of all wire circuits and to move ground connections back at least 100 yards from the front-line trenches. In addition, communicators were ordered not to mention the names or movements of units, the location of guns, or other tactical information.

All of this had little effect. In fact, compromises were worse in 1916 than in 1915. Despite orders, officers continued discussing plans over the telephone, sometimes

with disastrous results. In the fall of 1916, for example, the British sustained thousands of casualties in attempting to take a village on the river Somme. When it was finally captured, the British found in an enemy dugout a complete transcript of an earlier operational order which a British major had read over the telephone to one of his battalions despite the subordinate's protests that the procedure was dangerous. The British signal historian writes: "Hundreds of brave men perished, hundreds more were maimed for life as a result of this one act of incredible foolishness" He added that Comsec was so poor in September 1916 that "it would not have been surprising if the German Intelligence Service had been able to reconstruct . . . practically the whole constitution of the British Army as it existed at the time, and to anticipate the most jealously-guarded intentions of the Staff."

A combined intercept and security service was in full operation by the end of 1916 and was immediately successful in intercepting enemy communications and in catching shortcomings in British Comsec. But even though countless compromises were reported, improvement in Comsec was very slow. It wasn't until grounded circuits were moved back farther from the front lines and eventually replaced by twisted-pair circuits, and alternating-current sets were replaced by direct-current equipment, that British wireline communications could be considered technologically secure. Cryptographically, the introduction of code and cipher also helped.

Unfortunately, much of this was negated, until late in the war, by the careless use of the telephone. Such carelessness in forward areas was made a court-martial offense, but the enlisted men were the ones usually punished. Officers seemed to be immune; General Staff officers in particular resisted all attempts at Comsec discipline. According to one author, the General Staff nullified the value of a secure telegraph system by using it

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for routine traffic while continuing to talk tactics over the telephone. At one stroke they thus eliminated, as the author put it, "all the unimportant and confusing talk which had for years hampered the enemy in his efforts to intercept the really important conversations."

In fairness, it should be said that the British signal officer labored under all the difficulties inherent in dual-hatting. His authority over Comsec in his division derived from the General Staff. He was at the same time operationally responsible to the line officers above him, and they usually considered him a signal officer only. That, together with generally feeble support from the Staff, weakened his Comsec role.

France.—Like the British, the French discovered the need for Comsec in 1915. Unlike the British, they enforced telephone discipline. In quiet sectors, only a few specially trained officers were allowed to use the telephone, and all messages had to be conveyed in frequently changed codes. The restrictions were relaxed somewhat in the more active sectors on the theory that whatever the enemy learned would be outdated before it could be used.

The United States.—The technical aspects of Comsec were fairly well known by the time America entered the war, and we took full advantage of that knowledge. But like the British, we never learned to deal adequately with loose talk on the telephone.

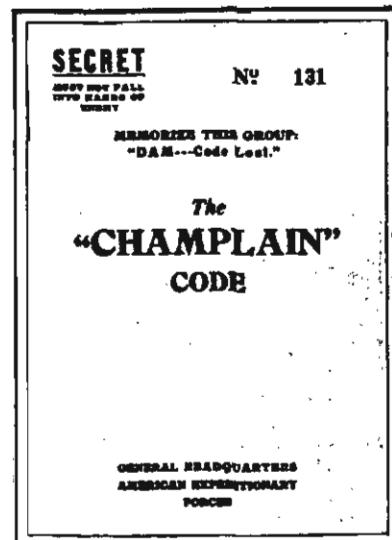
American practice was to send discrepancy reports to the commanders of units which had violated Comsec procedures. The reports were usually ignored. The Chief of the Radio Intelligence Section reported that only once was an officer reprimanded for violating Comsec rules. In most cases the offenders were excused on the grounds that they didn't know of the regulations, or they were too busy to follow them, or they were justified in their actions.

Signal Corps telephone operators were instructed to rip out any connection over which secret information was passing in the clear. While this undoubtedly reduced compromises, it did not eliminate them. To cite just one example, an American regimental commander close to the enemy lines used the phone to pass plain language instructions for an attack. Two minutes later the Germans unleashed the heaviest barrage that had ever hit that particular unit. The Chief of the Signal Corps' Code Compilation Section later wrote: "How many lives were needlessly sacrificed by this indiscretion can never be computed, but the capture of an enemy amplifier in the front area of this attack emphasized the folly of such negligence."

The American tactical codes (the so-called "trench codes") were excellent, but again the human element limited their effectiveness. As Frank Moorman, Chief of the Radio Intelligence Section, put it: ". . . there certainly

never existed on the western front a force more negligent in the use of their own code than was the American army." Moorman later suggested a way of dealing with those who used code carelessly:

My idea would be to hang a few of the offenders. This would not only get rid of some but would discourage the development of others. It would be a saving of lives to do it. It is a sacrifice of American lives to unnecessarily assist the enemy in the solution of our code.



The cover of the first of the "Lake" series of American field codes. This one was issued to the Second Army on October 7, 1918. Note the code group used to report the loss of the codebook.

Moorman summed up America's Comsec effort this way: "We never got a real control because the armistice came along just about that time, just when we were getting to work."

*The Central Powers**

Germany.—In Comsec, the Germans seemed to do almost everything right. Radio was never used when more secure communications could be employed; plain language was held to a minimum; communications equipment and systems were as secure as the technology would permit; and the need-to-know principle was strictly observed.**

*Little information is available on Comsec in the Austro-Hungarian army.

**Theoretically at least, the soldiers who installed the ground mats did not know what they were for, and the intercept operators didn't know how the signals were collected. Only authorized persons were allowed in the listening stations, although in emergencies troops could take refuge there, but the intercept equipment had to be kept out of sight.

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Aware of the price the Russians had paid for their careless use of radio, Field Marshal Hindenburg, as late as the spring of 1917, opposed using field radio in the German army except for the interception of enemy communications. He was overruled, but Comsec was by then becoming second nature to German communicators. By posters, lectures and orders they were constantly reminded that "The Enemy Is Listening." They took the warning seriously—rumor had it that violators wound up in front of a firing squad.

All the belligerents restricted communications near the front lines. In the Germans' 3-km-wide "danger zone" only officers and selected NCO's were allowed to use the telephone. Except in emergencies all messages had to be encoded; this included those sent by courier, dogs and pigeons.

By 1918, German communications discipline was so good that the Americans obtained little intelligence from the enemy's radio or telephone traffic. One reason was that Comsec officers were by then attached to headquarters down at least as far as regiments. But lapses still occurred. In March 1918, a German station compromised a new code by sending the same message in both the old and new

codes. Within 48 hours the Allies were reading the new code and knew many of the plans for the major German offensive that began a week later. "The sending of this one message must certainly have cost the lives of thousands of Germans," Moortman said, "and conceivably it changed the result of one of the greatest efforts made by the German armies."

On another occasion, a German listening station intercepted a message about a planned enemy gas attack, and relayed it in the clear to headquarters. An Allied intercept unit caught that message, and caused the time and place of the attack to be changed. According to a German report on the incident, "... the carelessness of our operators was the direct cause of the death of many of their comrades."

Jamming

The Allies were divided on the question of jamming German radio communications. France was for it, Britain was against. The British view prevailed, although the French used the Eiffel Tower radio station to jam German communications early in the war.

Corps Signal Commander 605.
(Combes Corps)

JANUARY 20, 1918.

SECRET

Not to be taken into the front-line trenches.

REGULATIONS FOR LISTENING STATIONS

1. LISTENING SERVICE.

1. The Chief of the listening station is responsible that the listening apparatus be manned whenever interception is possible (by two men during times of great activity).
2. Linemen, when not otherwise occupied, may be used to intercept Morse signals. For this purpose all linemen are to be trained in intercepting Morse signals.
3. When an interpreter is taking a message and another can be heard at the same time, he is to arrange with the other interpreter to take it, so that both will be recorded.
4. When neither telephone conversation nor Morse signals can be heard, the tuning of the receiving apparatus is to be repeatedly changed in order to determine whether anything can be heard. Ground leads are to be frequently tested to see whether they are in good order.
5. French conversation and messages are to be given preference over German.
6. The decision as to whether an intercept is of importance does not in any sense lie with the operator or chief of station. Everything which can be heard is to be recorded and included in the report on the forms furnished by the army.
7. Words which are not understood are to be written down phonetically.
8. Any impressions which the operator may receive are to be noted in the margin, e.g., accent and pronunciation; old or young voice; excited, hurried, commanding, laughter, distance, etc.
9. Under impressions come such conclusions as the operator may form regarding the contents or purpose of the message. These are to be written down. The degree of certainty is also to be noted. The operator must not hesitate to state his conclusions. If he gets any further evidence, either confirming or disproving his conclusions, he is to add them to the daily report.

Intercept stations often doubled as Comsec stations (Note Regulation No. 5). The regulations shown here are from a captured German document.

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At about the same time, German stations on the Western Front were reportedly ordered to jam communications between France and Russia. Whether they did so is not known, but in any case the intelligence being obtained from interception probably influenced the high command to discontinue or greatly reduce jamming on all fronts.

The British (and probably the French) experimented with jamming the enemy's wireline intercept operations. Jamming began along the entire British front in October 1916, stopping whenever interception of German communications was desired. The British soon found that jamming was costly and ineffective and it was discontinued.

Whether their use in this way was intentional or not, electric generators behind the German lines often protected their telephone communications from interception. On the theory that the interference might also protect their own communications, the Americans communicated by phone only when the generators were running, suspending all conversation during the period that the machines were shut down for maintenance each day. Toward the end of the war, Signal Corps engineers designed an electrical filter which helped the intercept operators copy enemy signals through the noise.

Deception

The Russians, so backward in so many other ways, may have been the first to employ radio deception. That was in the spring of 1916, when they sent fake radio traffic in an attempt to fool the Germans. By 1918 all the armies were practicing deception, or "camouflage," as it was then known. Fake calls and networks, bogus traffic, radio silence and planted codes were all used with considerable success.

An Assessment

World War I affected our business in two ways—it catapulted radio and radio interception to new heights, and

it forced all countries into a greater appreciation of communications security. Though the Comint successes were less decisive than those of World War II, they nevertheless influenced the outcome of the war.

It was the Roman philosopher Seneca who said that "the fortunes of war are always doubtful." By making the fortunes of World War I less doubtful, Comint helped make our future more certain.

CREDITS AND ADDITIONAL READING

Without the help of the NSA Library facilities and staff, this story could not have been written. Special thanks are due

[redacted] former Spectrum editor, deserves credit for the original idea.

The best general works on communications, including Comint and Comsec, in World War I are, for the U.S., *Report of the Chief Signal Officer to the Secretary of War, 1919*; for Britain, *The Signal Service in the European War of 1914 to 1918 (France)*, by Raymond E. Priestley; and for Germany, *War Secrets In The Ether (Part I)*, by Wilhelm F. Flicke. All are available in the Library's Cryptologic Collection or from the Library of Congress.

For an excellent account of the Zimmermann Telegram, the greatest Comint coup of World War I, see Henry Schorreck's article, "The Telegram That Changed History," in *Cryptologic Spectrum*, Summer 1970.

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[redacted] of the Director's Staff, has more than an academic interest in radio history. He enlivens the subject by collecting and restoring antique radios. Receivers from his collection of more than 30 sets have been seen on local TV shows, and his article on restoring antique radios was published in *Popular Electronics*.